

This listing of claims replaces all prior versions and listings of claims in the application:

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1. (Previously Amended) Method for automatically matching the levels of the signals exchanged between a first apparatus and a second apparatus which communicates with the said first apparatus via a transmission line, characterized in that it comprises the following steps:  
the signal which comes from the transmission line and is received by the first apparatus is digitized,

12 on the basis of the digital data representing the signals exchanged with the transmission line, an estimate is made of the transfer function equal to the ratio of the signal received by the first apparatus to the signal transmitted by the first apparatus,  
each of the exchanged signals is respectively multiplied by a suitable gain determined on the basis of the estimated value of the said transfer function.

18 2. (Previously Amended) Method according to Claim 1, characterized in that it comprises the following steps:

the estimate of the transfer function defined in the following way is made:

$$\frac{OUT2}{IN1} = K(Z_L) + \varepsilon$$

where

$$K(Z_L) = \frac{Z_L}{2 \cdot (Z_L + 2 \cdot R_1)}$$

24 and  $Z_L$  represents the impedance of the transmission line, while  $R_1$  represents the source impedance of the transmission line,

- the following are calculated:

for the transmitter signal, the first gain  $G_1$

$$G_1(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)}$$

and for the received signal, the second gain  $G_2$

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$$G_2(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)}$$

3. (Previously Amended) Method according to Claim 1, characterized in that the gain of the  
6 signal received by the first apparatus is chosen so that the component of the signal transmitted by  
the second apparatus in the signal received by the first apparatus is independent of the impedance  
of the transmission line.

4. (Previously Amended) Method according to Claim 1, characterized in that the gain of the  
signal transmitted by the first apparatus is chosen so that the component of this signal in the  
12 signal received by the second apparatus is independent of the impedance of the transmission line.

5. (Previously Amended) Method according to Claim 3, characterized in that the said  
calculation method implements an identification algorithm.

6. (Previously Amended) Device for automatically matching the levels of signals exchanged  
18 between a first apparatus and a second apparatus communicating via a transmission line,  
characterized in that it has:  
an analogue/digital converter capable of digitizing a signal entering the first apparatus,  
a digital/analogue converter capable of converting a signal transmitted by the first  
apparatus,

24 a calculation block intended to estimate the ratio of the incoming signal to the signal  
transmitted by the first apparatus, and to determine the gains needed for matching the levels of  
the signals transmitted and received by the first apparatus, the said gains being dependent on the  
said ratio.

7. (Previously Amended) Device according to Claim 6, characterized in that the block has a  
unit for identifying the transfer function interacting with a calculation module which is intended  
30 to supply a first amplification means with the first gain for matching the level of the signal  
transmitted by the first apparatus, and to supply a second amplification means with the second  
gain (G2) for matching the level of the signal received by the first apparatus.

8. (Previously Amended) Device according to Claim 5, characterized in that the calculation

block has a DSP circuit implementing an identification algorithm.

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9. (Previously Amended) Device according to Claim 8, characterized in that the identification algorithm is of the LMS, RLS or Kalman type.

10. (Previously Amended) Communication apparatus, characterized in that it has a device according to Claim 6.

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11. (New) Method for automatically matching the levels of the signals exchanged between a first apparatus and a second apparatus that communicates with the first apparatus via a transmission line, comprising the steps:

receiving and digitizing by the first apparatus the signal which comes from the transmission line,

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estimating, on the basis of the digital data representing the signals exchanged with the transmission line, the transfer function (K) equal to the ratio of the signal received by the first apparatus to the signal transmitted by the first apparatus, the estimate of the transfer function

(K) comprising  $\frac{OUT2}{IN1} = K(Z_L) + \varepsilon$  where  $K(Z_L) = \frac{Z_L}{2 \cdot (Z_L + 2 \cdot R_1)}$  and  $Z_L$  represents the

impedance of the transmission line, while  $R_1$  represents the source impedance of the

transmission line, the following are calculated: for the transmitter signal, the first gain  $G_1$

24 comprises  $G_1(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)}$  and for the received signal, the second gain  $G_2$  comprises

$G_2(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)}$ , and

multiplying each of the exchanged signals, respectively, by a suitable gain determined on the basis of the estimating of a value of the transfer function (K).

12. (New) Device for automatically matching the levels of signals exchanged between a first  
 6 apparatus and a second apparatus communicating via a transmission line, characterized in that it has:

an analogue/digital converter capable of digitizing a signal entering the first apparatus,  
 a digital/analogue converter capable of converting a signal transmitted by the first  
 apparatus,

12 a calculation block intended to estimate the ratio of the incoming signal to the signal  
 transmitted by the first apparatus, and to determine the gains needed for matching the levels of  
 the signals transmitted and received by the first apparatus, the gains being dependent a transfer  
 function (K) equal to the ratio of the incoming signal received by the first apparatus to the signal  
 transmitted by the first apparatus, the estimate of the transfer function (K) comprising

$$\frac{OUT2}{IN1} = K(Z_L) + \varepsilon \quad \text{where} \quad K(Z_L) = \frac{Z_L}{2 \cdot (Z_L + 2 \cdot R_1)} \quad \text{and } Z_L \text{ represents the impedance of the}$$

18 transmission line, while R1 represents the source impedance of the transmission line, the  
 following are calculated: for the signal transmitted, the first gain G1 comprises

$$G1(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)} \quad \text{and for the incoming signal received, the second gain G2 comprises}$$

$$G2(Z_L) = \frac{1}{1 - 2 \cdot K(Z_L)}$$